CITY COUNCIL UPDATE ON THE PLANNING STUDY FOR THE SOUTH LINDEN AVENUE AND SCOTT STREET CALTRAIN GRADE SEPARATION PROJECT

City Council Study Session
August 20, 2020

Public Works Department

PROJECT DEVELOPMENT TEAM

- City of San Bruno
- City of South San Francisco
- Caltrain
- Consultants
  - AECOM (Lead Technical)
  - APEX (Public Outreach)
  - CDM Smith (Traffic)

AGENDA

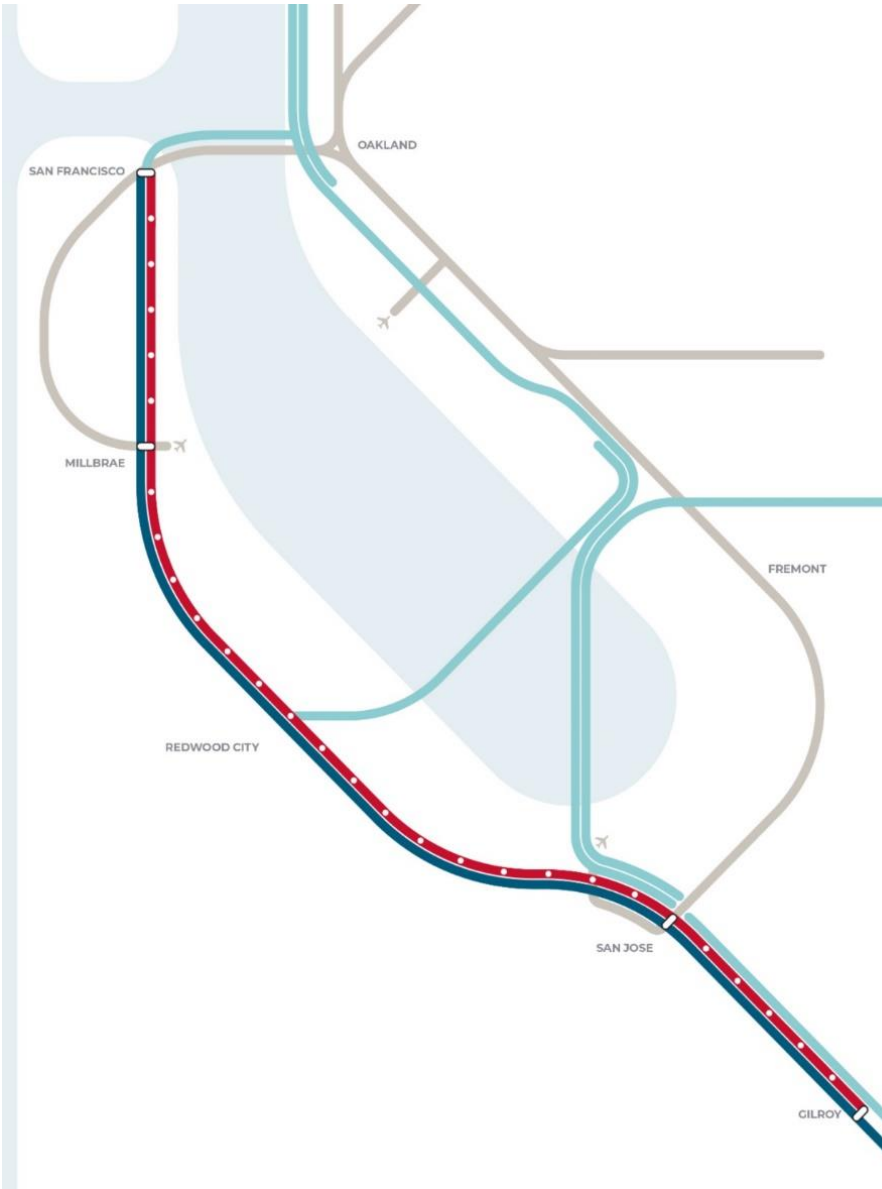
- Objectives
- Background
- Project Alternatives
  - Railroad Tracks
  - Pedestrian / Bicycle Crossing at Scott Street
- Community Feedback
- Staff Recommendation
- Answer Questions

OBJECTIVES

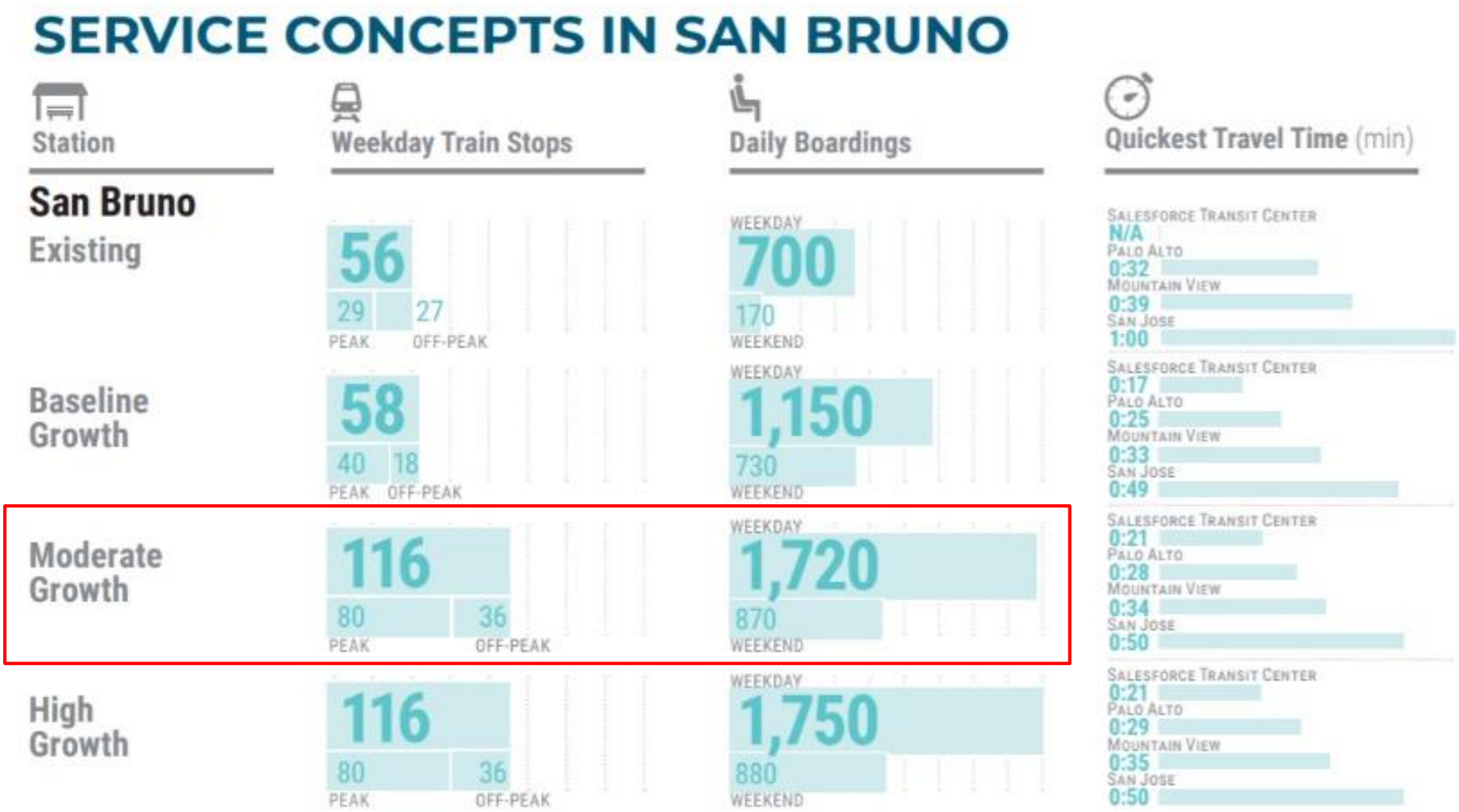
- Provide Update to the City Council
- Provide Information on Alternatives

CALTRAIN CORRIDOR: CURRENT PLANNING EFFORTS RELEVANT TO SAN BRUNO

- **Caltrain Business Plan Effort**
- **City-Led Grade Separation Efforts**
- **California High Speed Rail Project**

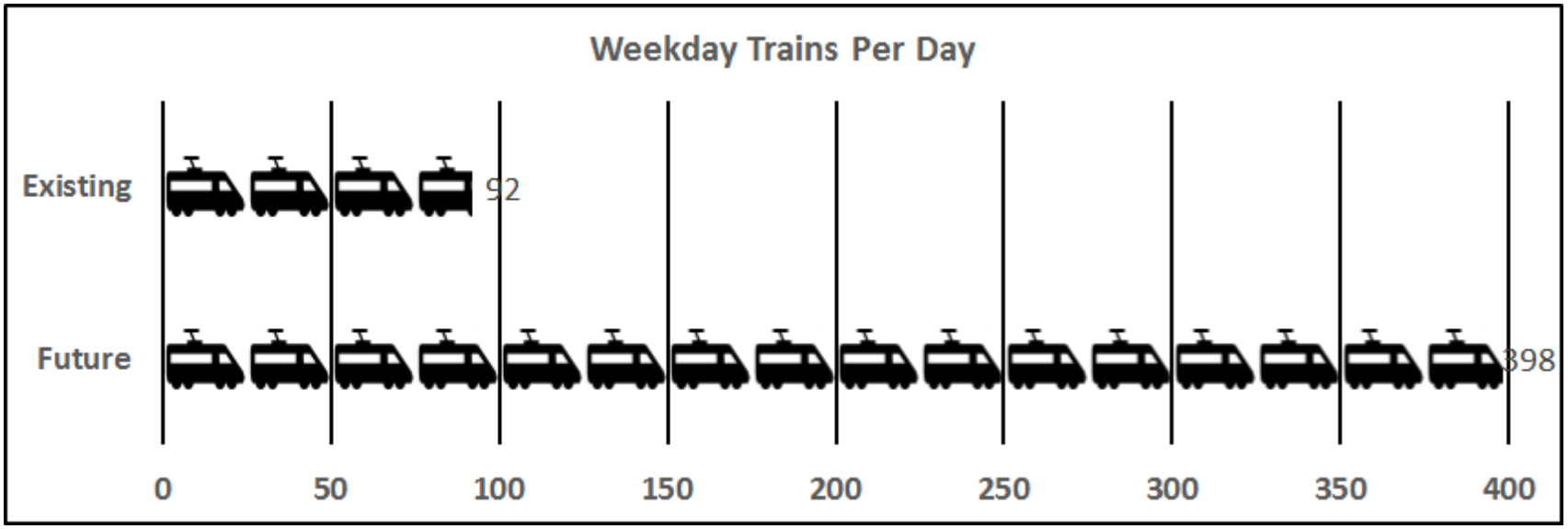


CALTRAIN BUSINESS PLAN EFFORT



CALTRAIN BUSINESS PLAN EFFORT

Long Range Service Vision (Adopted Moderate Growth Scenario): Weekday Trains Per Day

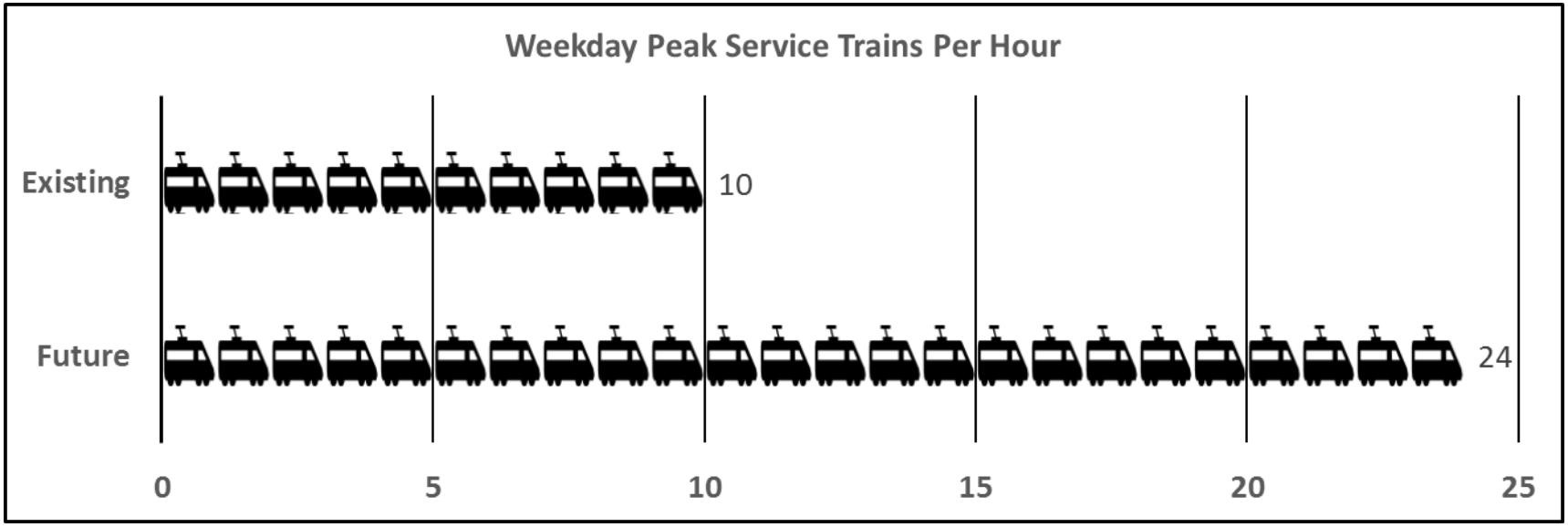


Potential Higher Growth Level of Service: Weekday Trains Per Day

- Could go as high as **478**.

CALTRAIN BUSINESS PLAN EFFORT

Long Range Service Vision (Adopted Moderate Growth Scenario): Number of Weekday Trains at "Peak" Hours

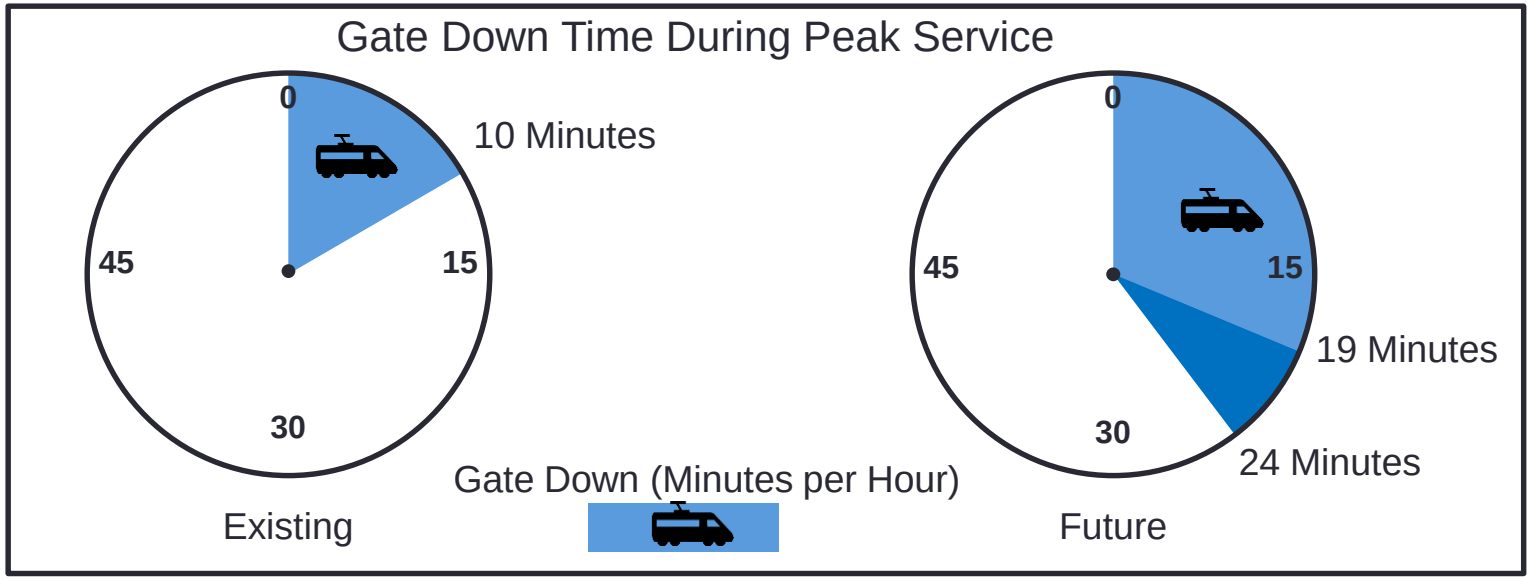


Potential Higher Growth Level of Service

- Could go as high as **32 trains/peak hour**.

CALTRAIN BUSINESS PLAN EFFORT

Long Range Service Vision (Adopted Moderate Growth Scenario): Gate Down Times at Peak Hours



Gate Down Times During Peak Service Hours:

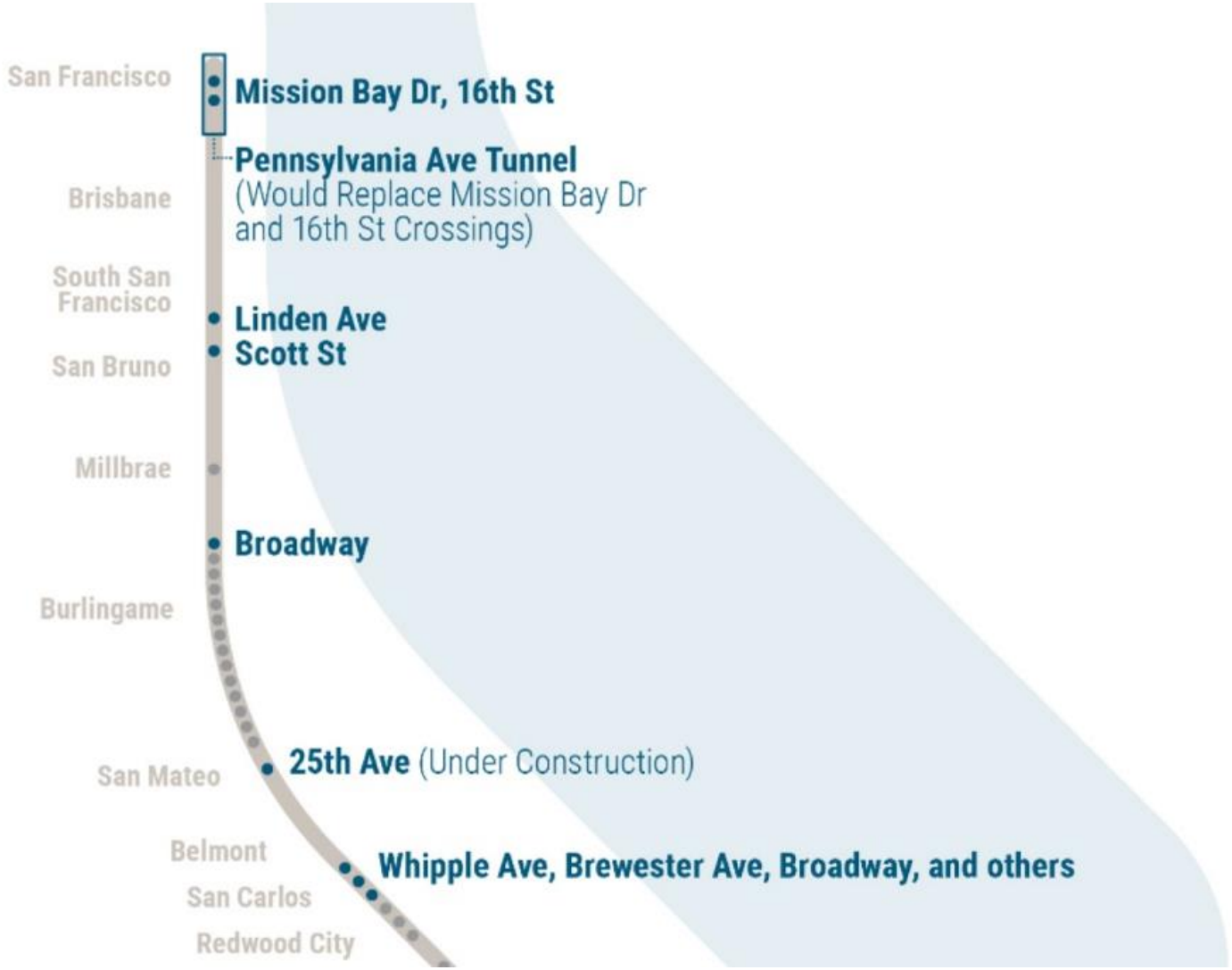
Existing	10 minutes each hour
Moderate Growth*	19 minutes each hour
High Growth*	24 minutes each hour

Trains will be passing through San Bruno every few minutes.

CITY-LED GRADE SEPARATION EFFORTS

- Currently, numerous City-led grade separation projects underway and at various stages of development.
- Cities currently compete with each other for limited funding and priority.

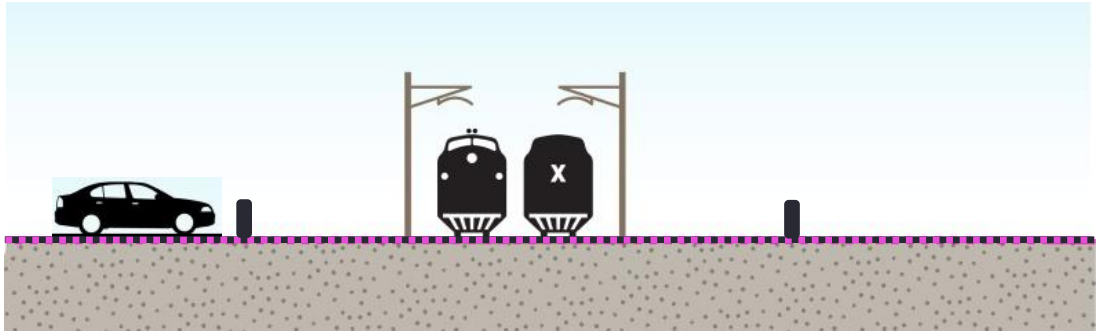
CITY-LED GRADE SEPARATION EFFORTS



CITY-LED GRADE SEPARATION EFFORTS

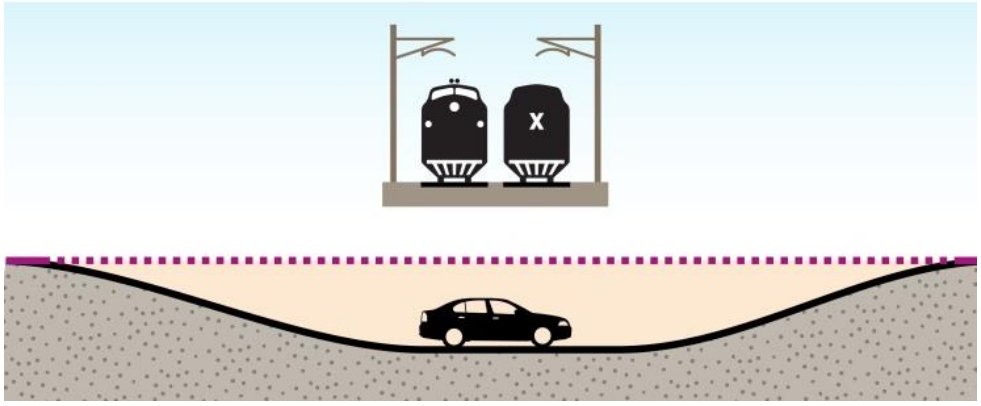
AT- GRADE

- Road and tracks intersect at different elevations



GRADE SEPARATION

- Road and tracks intersect at different elevations



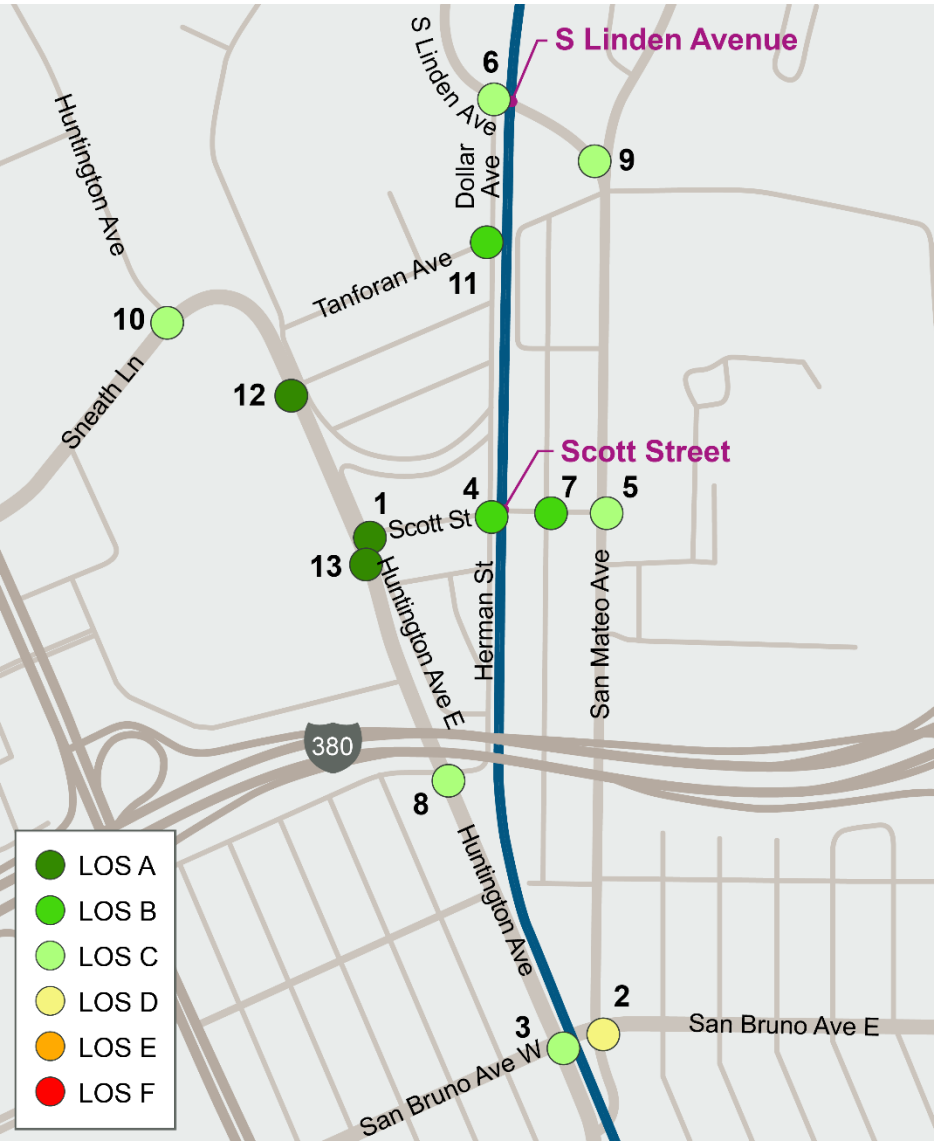
WHY BUILD A GRADE SEPARATION?

To protect the City of San Bruno, its residents, and its neighborhoods from the impact of more trains.

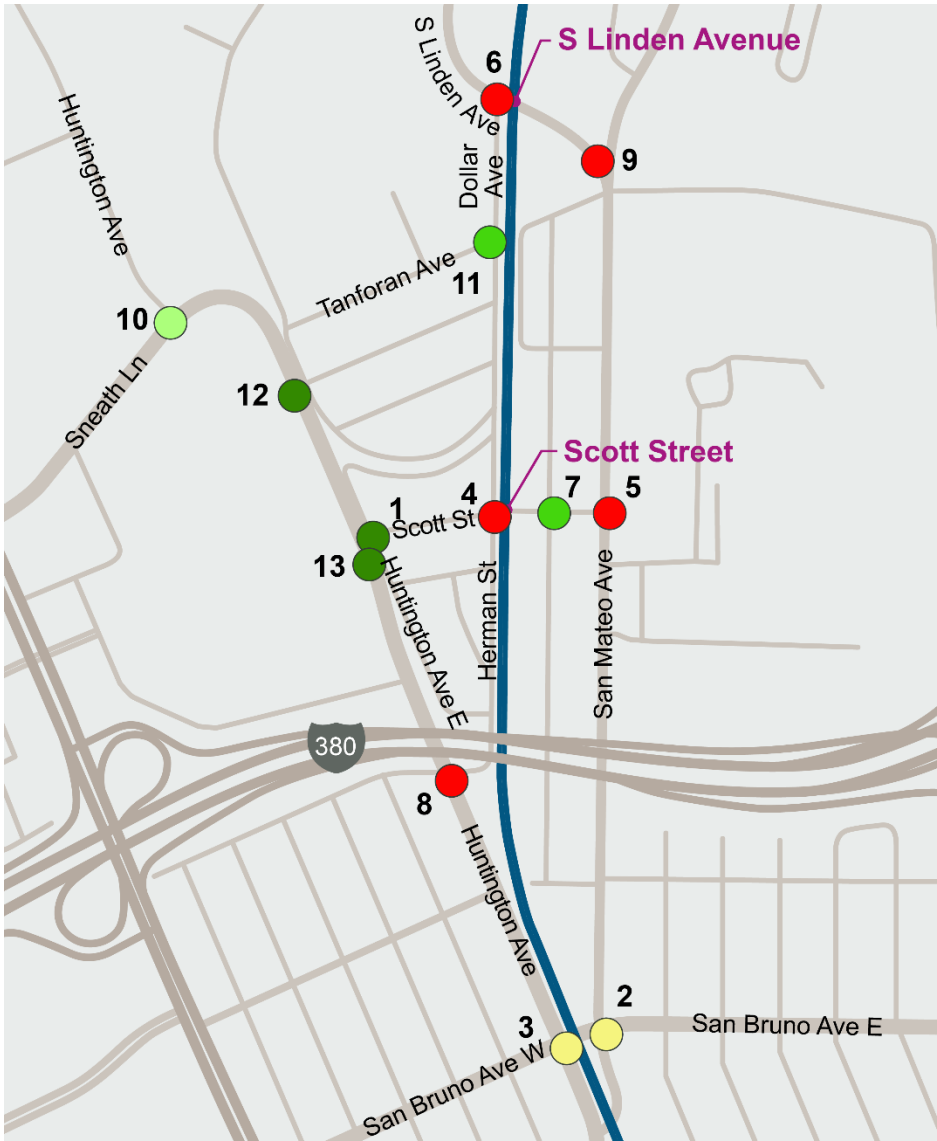
- Safety
- Congestion
- Noise

LOS – EXISTING ROADWAY NETWORK (AM PEAK)

Existing Volume

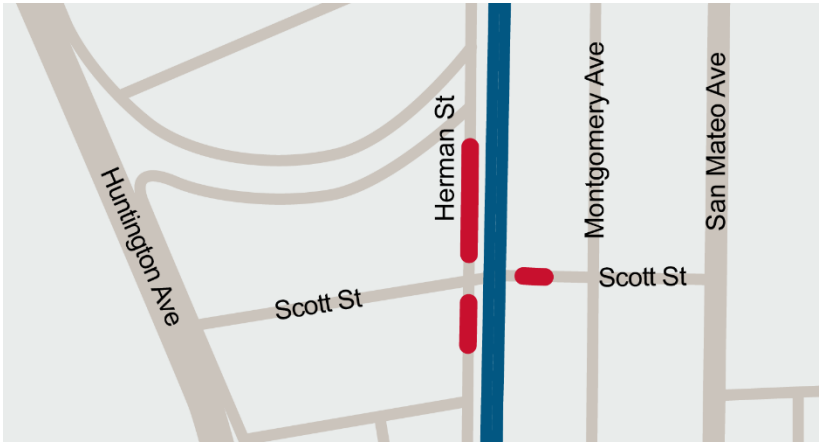


Option A
2045 Volume – Moderate Growth



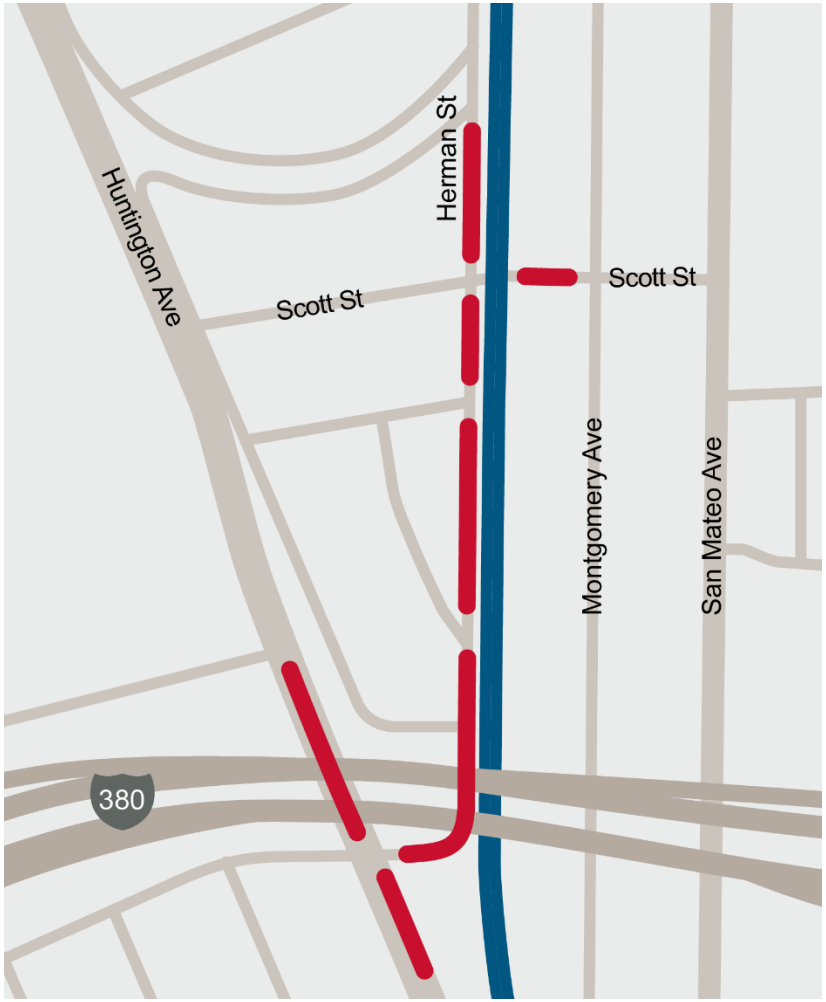
QUEUES – EXISTING ROADWAY NETWORK (AM PEAK)
SCOTT STREET

Existing Volume



Source: Consultant Team's SimTraffic Analysis.

2045 Volume – Moderate Growth

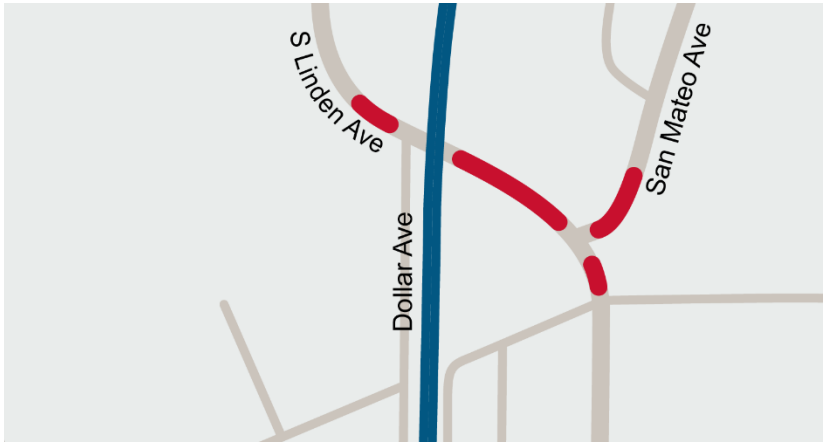


Source: Consultant Team's SimTraffic Analysis.

Queue
Caltrain

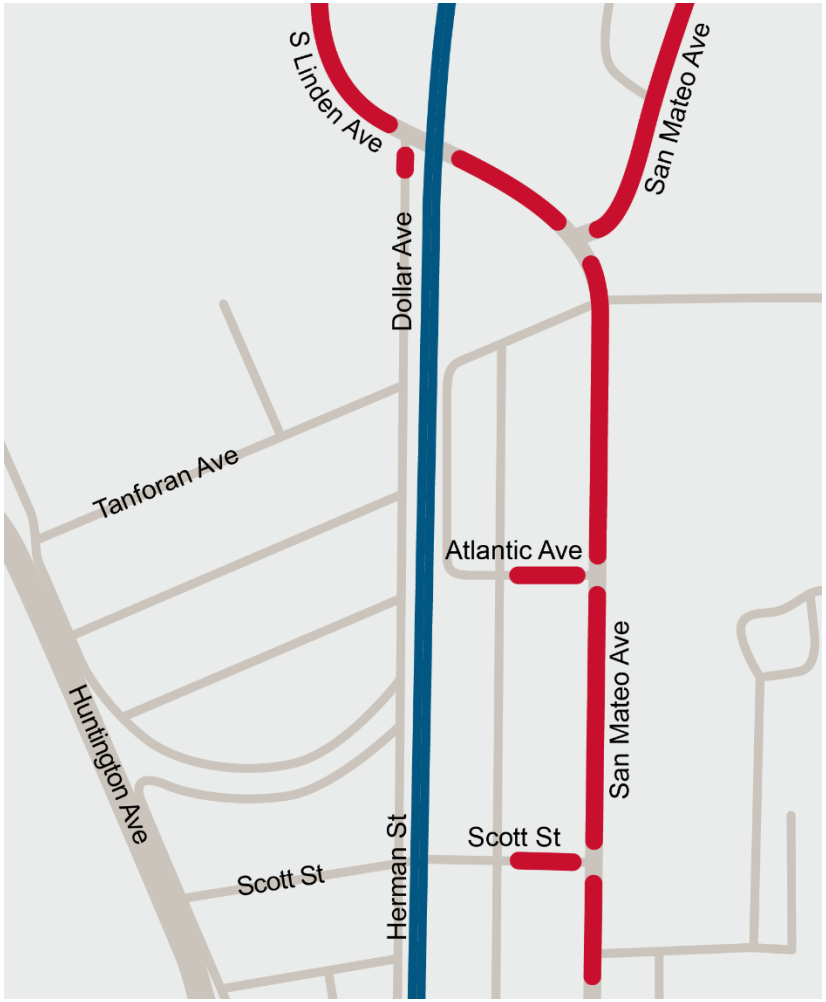
QUEUES – EXISTING ROADWAY NETWORK (PM PEAK)
S. LINDEN AVENUE

Existing Volume



Source: Consultant Team's SimTraffic Analysis.

2045 Volume – Moderate Growth



Source: Consultant Team's SimTraffic Analysis.

Queue
Caltrain

THREE OPTIONS AT SCOTT STREET

~~A: No grade separation at Scott Street~~

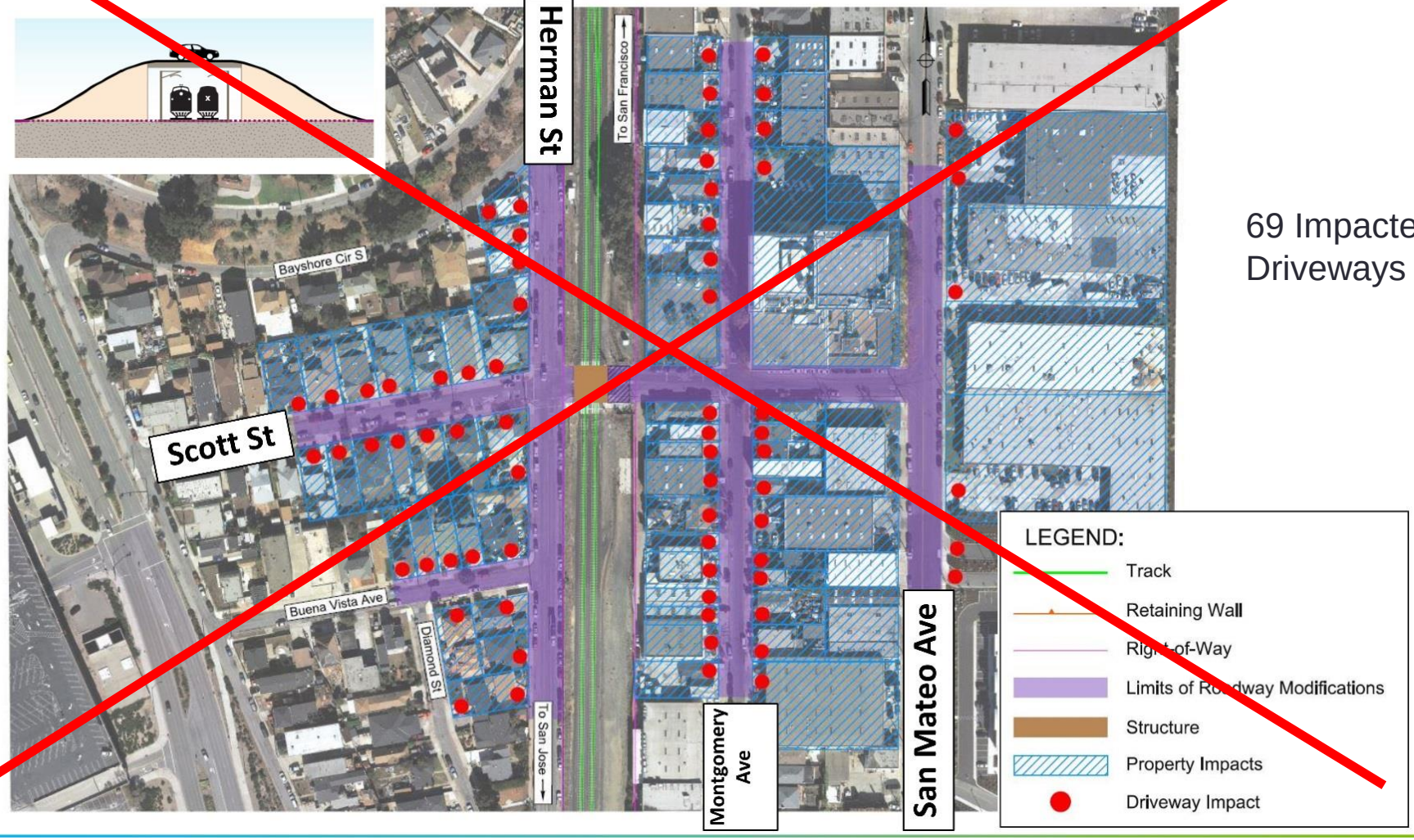
B: Scott Street grade separated for pedestrians and bicycles but closed to motor vehicles

~~C: Scott Street grade separated for pedestrians, bicycles, and motor vehicles (property impacts)~~

PROPERTY IMPACTS – WORST CASE

Option C-4: Rail at grade with Roadway Overpass

Scott Street Grade Separated for Vehicles, Pedestrians, Bikes

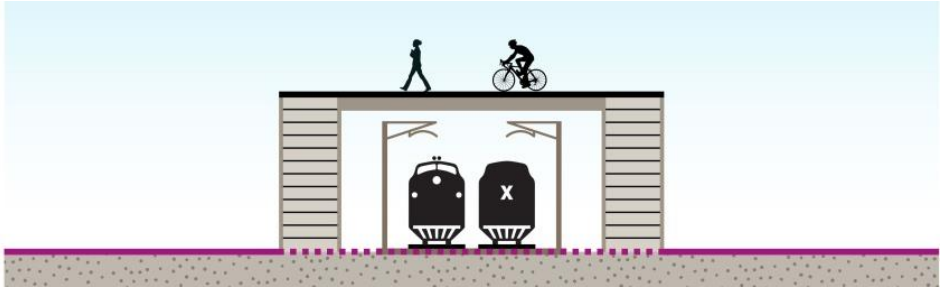


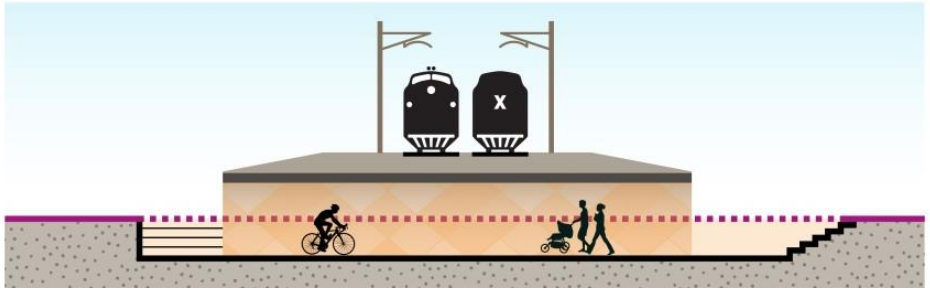
69 Impacted Driveways

SELECTED PLAN

Grade separation for pedestrians and bicycles but closed to motor vehicles

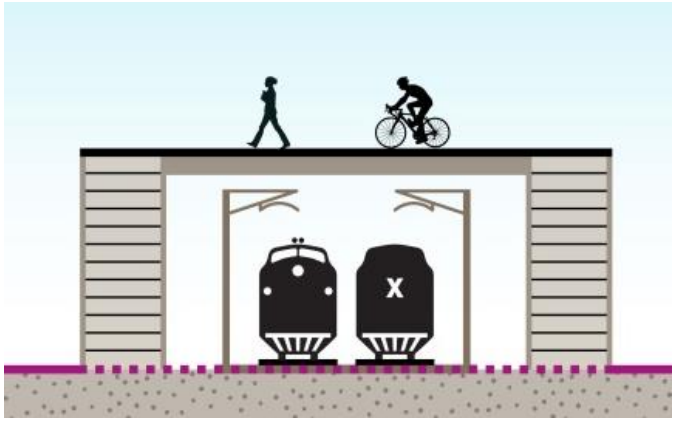
- Pedestrians and bicycle cross tracks using overpass or underpass
- Motor vehicles cannot cross tracks
- Motor vehicle traffic is diverted but overall congestion levels are better than do nothing in the future
- Eliminates conflicts between trains and other modes of travel
- Reduced trains horn noise

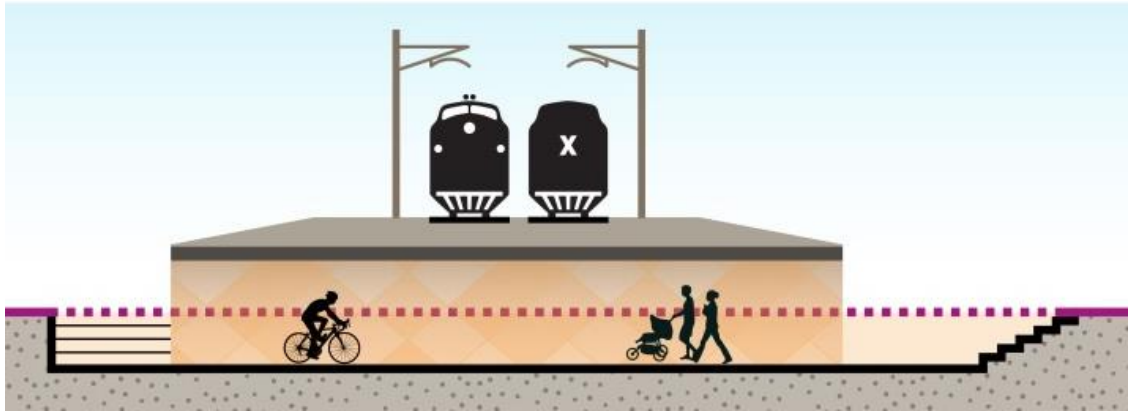


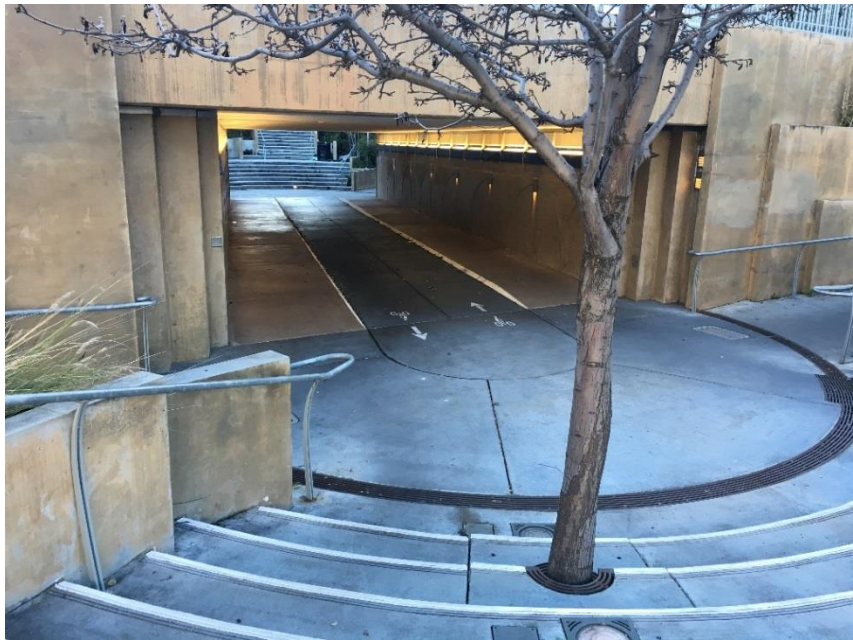


SELECTED PLAN

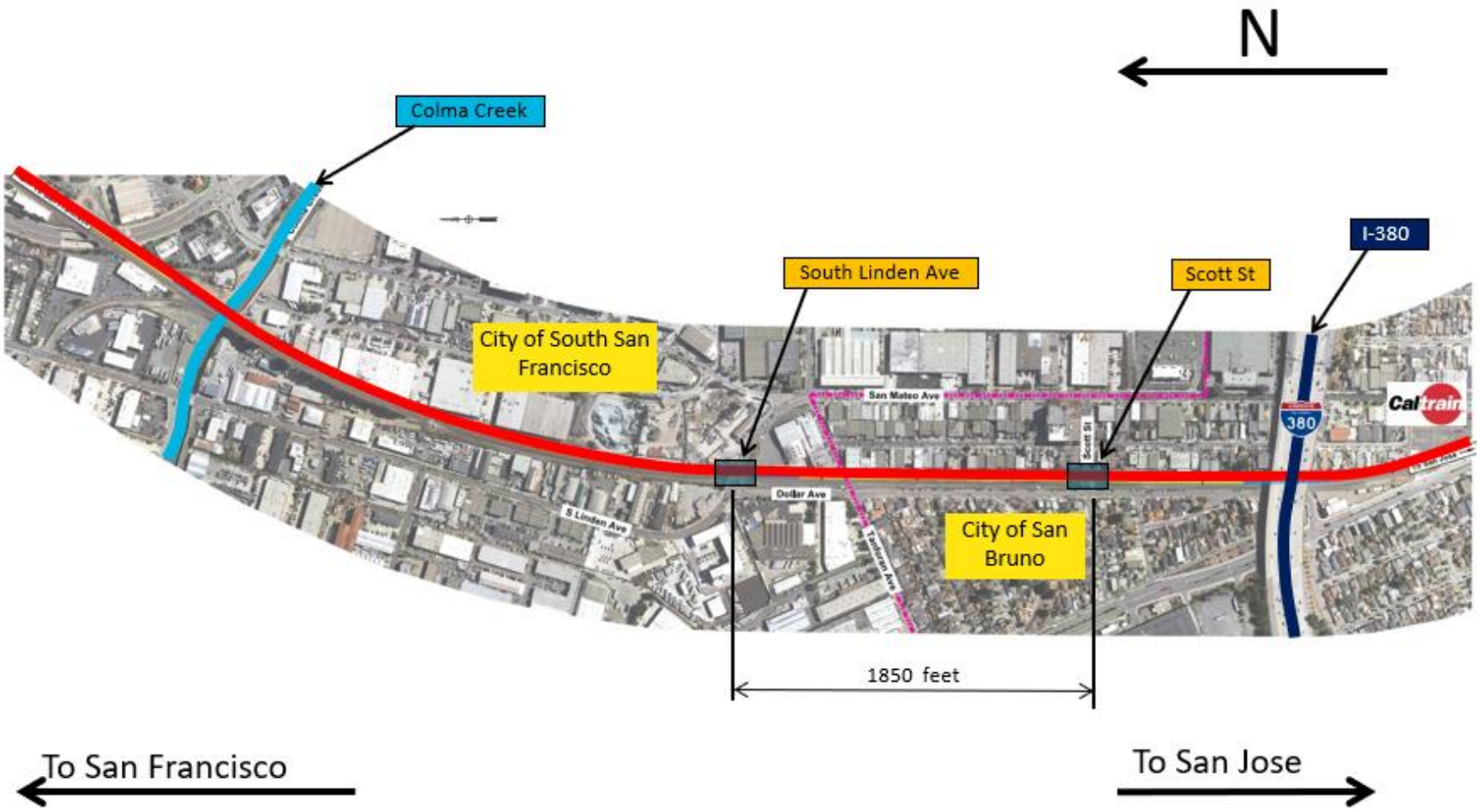
Grade separation for pedestrians and bicycles but closed to motor vehicles







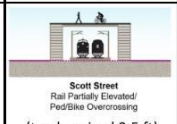
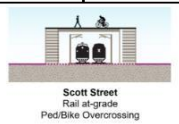
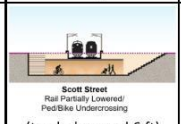
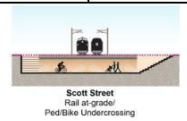
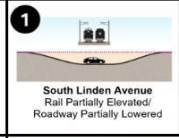
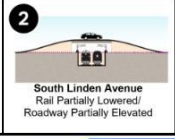
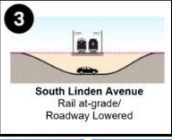
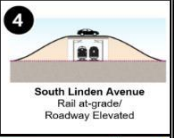
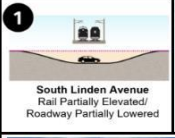
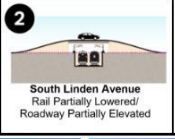
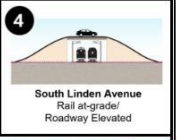
PROJECT LOCATION MAP



SUMMARY OF ALTERNATIVES

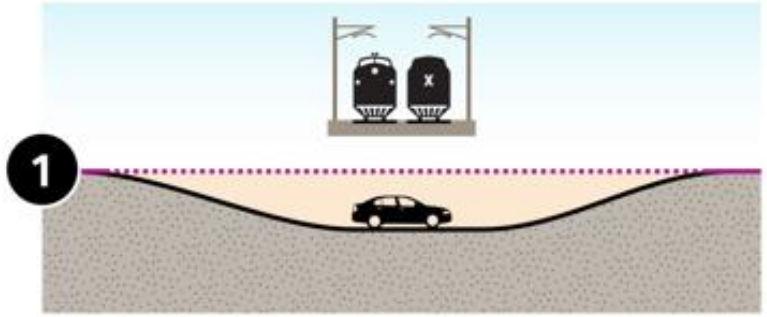
ATTACHMENT 2

SUMMARY TABLE OF EIGHT GRADE SEPARATION ALTERNATIVES AT SCOTT STREET
SOUTH LINDEN AVENUE AND SCOTT STREET GRADE SEPARATION PLANNING STUDY PROJECT
City of San Bruno, City Council Study Session on August 20, 2020

	SCOTT STREET PED/BIKE OVERCROSSING				SCOTT STREET PED/BIKE UNDERCROSSING				
Railroad Tracks Alternatives 1-4	**Alternative 1: Rail Partially Elevated**	**Alternative 2: Rail Partially Lowered**	**Alternative 3: Rail Remains At-Grade**	**Alternative 4: Rail Remains At-Grade**	**Railroad Tracks Alternatives 5-8**	**Alternative 5: Rail Partially Elevated**	**Alternative 6: Rail Partially Lowered**	**Alternative 7: Rail Remains At-Grade**	**Alternative 8: Rail Remains At-Grade**
Scott Street Concept	 (tracks raised 2.5 ft)	 (tracks lowered 6 ft)			**Scott Street Concept**	 (tracks raised 2.5 ft)	 (tracks lowered 6 ft)		
Elevation of Structure Elevation at Eye Level (5.5 ft tall person)	33.5 feet above grade 38.5 feet above grade	25 feet above grade 30 feet above grade	31 feet above grade 36 feet above grade		**Floor Elevation of Undercrossing**	14 feet below grade	22.5 below grade	16.5 feet below grade	
Related So. Linden Concept					**Related So. Linden Concept**				
Scott Street Rendering					**Scott Street Rendering**				
Advantages of Overcrossing	- Easier to construct than an undercrossing - Less disruption to railroad operations during construction - Potentially Less costly - Community expressed preference for overcrossing due to concerns around undercrossings				**Advantages of Undercrossing**	- Easier for pedestrians to cross (shorter ramps) - Low visual impact			
Disadvantages of Overcrossing	- More difficult to cross (longer ramps) - Greater visual impact overall				**Disadvantages of Undercrossing**	- More difficult to construct than an overcrossing - Greater impact to railroad operations during construction - Potentially more costly - More maintenance for stormwater			
Staff Comments	Alternative for railroad track preferred but overcrossing expected to have substantial visual impacts.	Not recommended, tracks at San Bruno are lowered by 6 ft at a significant cost, for a minor benefit in overcrossing height.	Not recommended, similar to Alternatives 1 and 5, but with more property impacts at So. Linden Ave	Not recommended, similar to Alternatives 1 and 5, but with more property impacts at So. Linden Ave	**Staff Comments**	**Staff Recommended Alternative** with Ped/Bike Undercrossing due to shortest crossing distance and low visual impact above ground	Not recommended; undercrossing deep	Not recommended, similar to Alternatives 1 and 5, but with more property impacts at So. Linden Ave	Not recommended, similar to Alternatives 1 and 5, but with more property impacts at So. Linden Ave

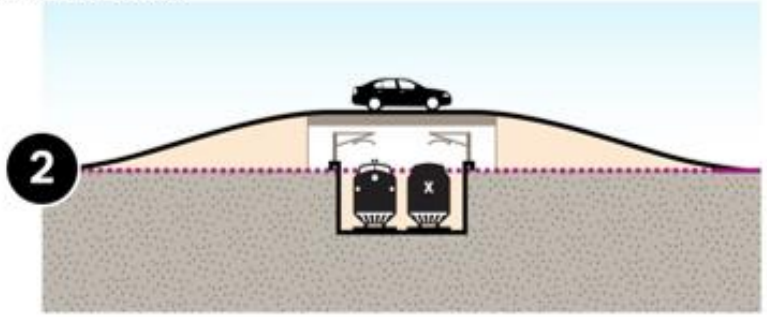
FOUR ALTERNATIVES FOR TRAIN TRACKS SOUTH LINDEN AVE (SSF)

Alternative 1: Hybrid (Track Raised, Linden Ave Lowered)



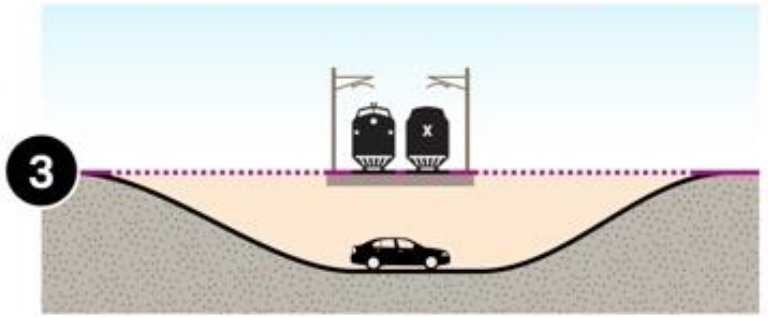
South Linden Avenue
Rail Partially Elevated/Roadway Partially Lowered

Alternative 2: Hybrid (Track Lowered, Linden Ave Raised)



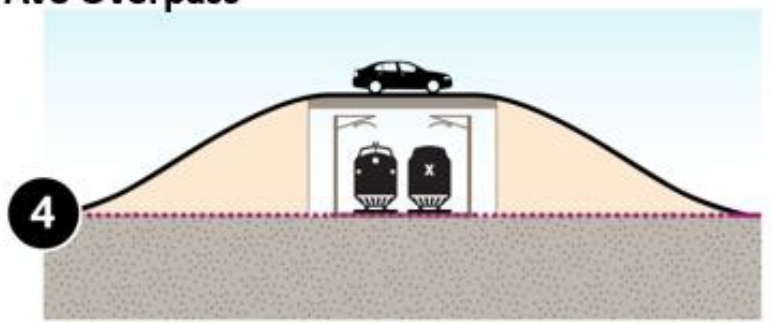
South Linden Avenue
Rail Partially Lowered/Roadway Partially Elevated

Alternative 3: Rail at grade with Linden Ave Underpass



South Linden Avenue
Rail at-grade, Roadway Lowered

Alternative 4: Rail at grade with Linden Ave Overpass



South Linden Avenue
Rail at-grade, Roadway Elevated

THREE ALTERNATIVES FOR TRACKS AT SCOTT STREET

- Tracks raised (2.5 feet) – Alternatives 1 and 5
- Tracks lowered (6 feet) – Alternatives 2 and 6
- Tracks stay at current elevation – Alternatives 3, 4, 7, and 8
  - Treated as one alternative for San Bruno

PEDESTRIAN / BICYCLE OVERCROSSING SCOTT STREET (SAN BRUNO)

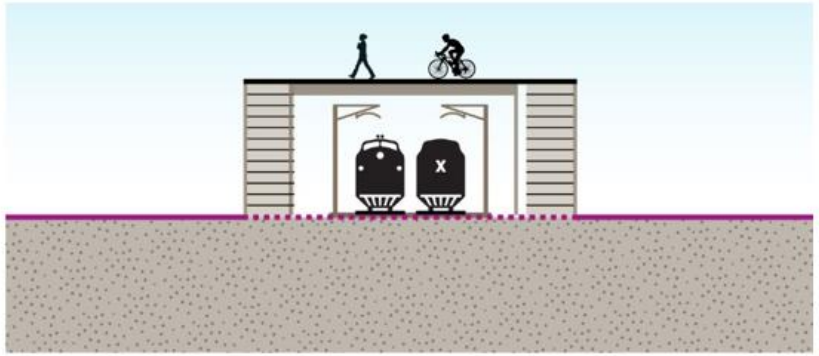
Alternative 1: Hybrid (Track Raised, Linden Ave Lowered)

Scott Street
Rail Partially Elevated with a Ped/Bike Overcrossing

Alternative 2: Hybrid (Track Lowered, Linden Ave Raised)

Scott Street
Rail Partially Lowered with a Ped/Bike Overcrossing

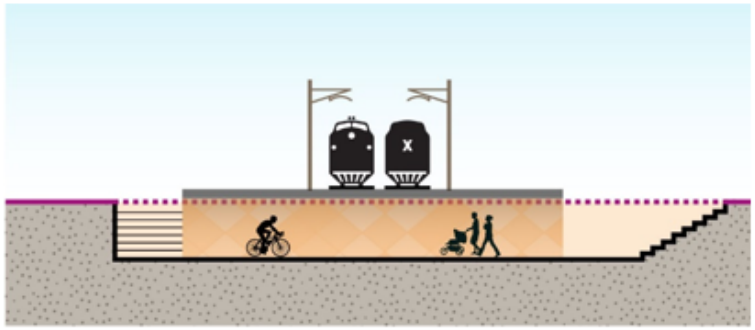
Alternatives 3 and 4: Rail at grade with Linden Ave Underpass or Overpass



Scott Street
Rail at-grade with a Ped/Bike Overcrossing

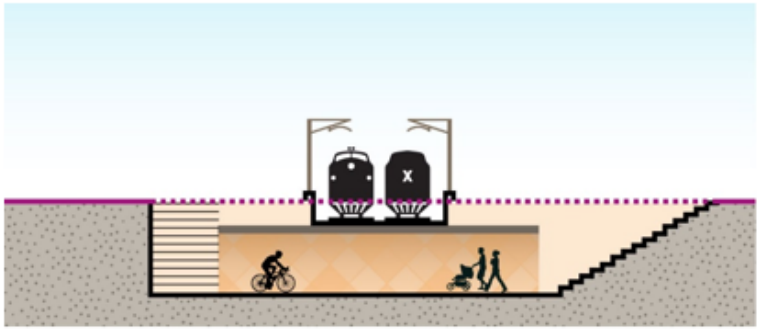
PEDESTRIAN / BICYCLE UNDERCROSSING SCOTT STREET (SAN BRUNO)

Alternative 5: Hybrid (Track Raised, Linden Ave Lowered)



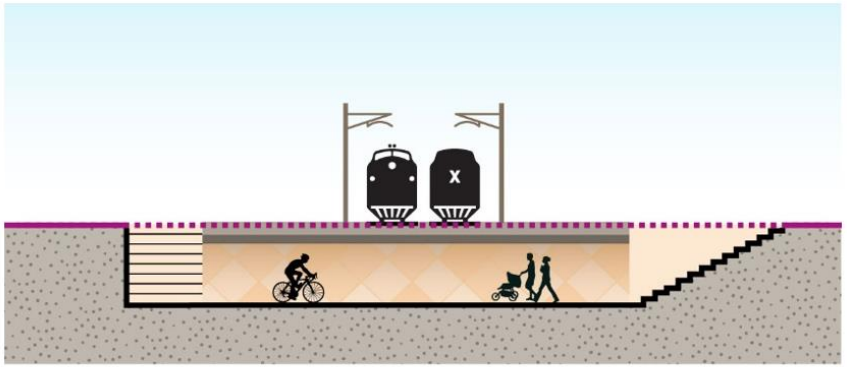
Scott Street
Rail Partially Elevated with a Ped/Bike Undercrossing

Alternative 6: Hybrid (Track Lowered, Linden Ave Raised)



Scott Street
Rail Partially Lowered with a Ped/Bike Undercrossing

Alternative 7 and 8: Rail at grade with Linden Ave Underpass



Scott Street
Rail at-grade with a Ped/Bike Undercrossing

EXAMPLE OF PED/BIKE OVERCROSSING

Blossom Hill Road, San Jose

EXAMPLE OF PED/BIKE OVERCROSSING

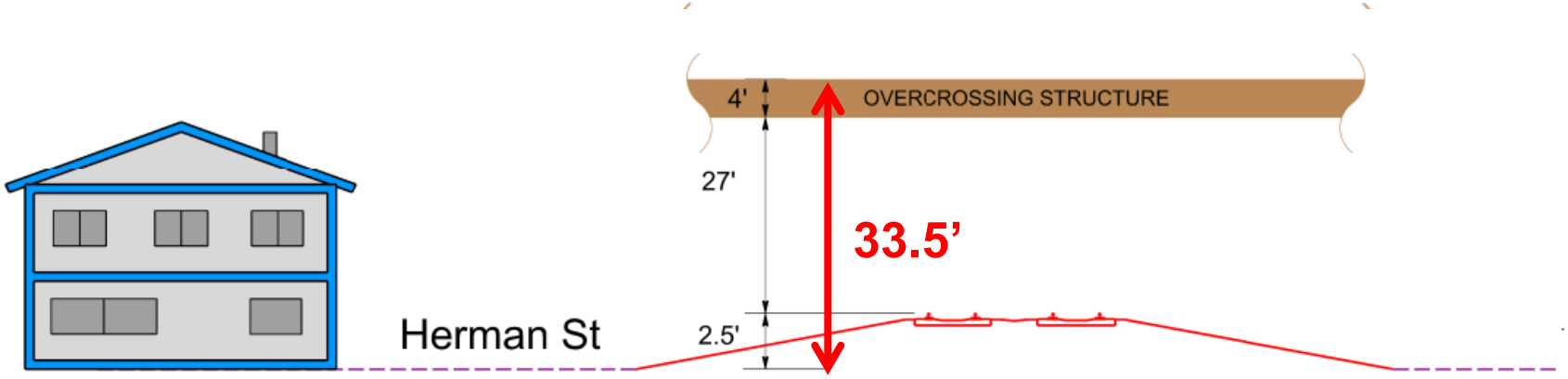
Market Street Overpass, San Francisco

EXAMPLE OF PED/BIKE UNDERCROSSING

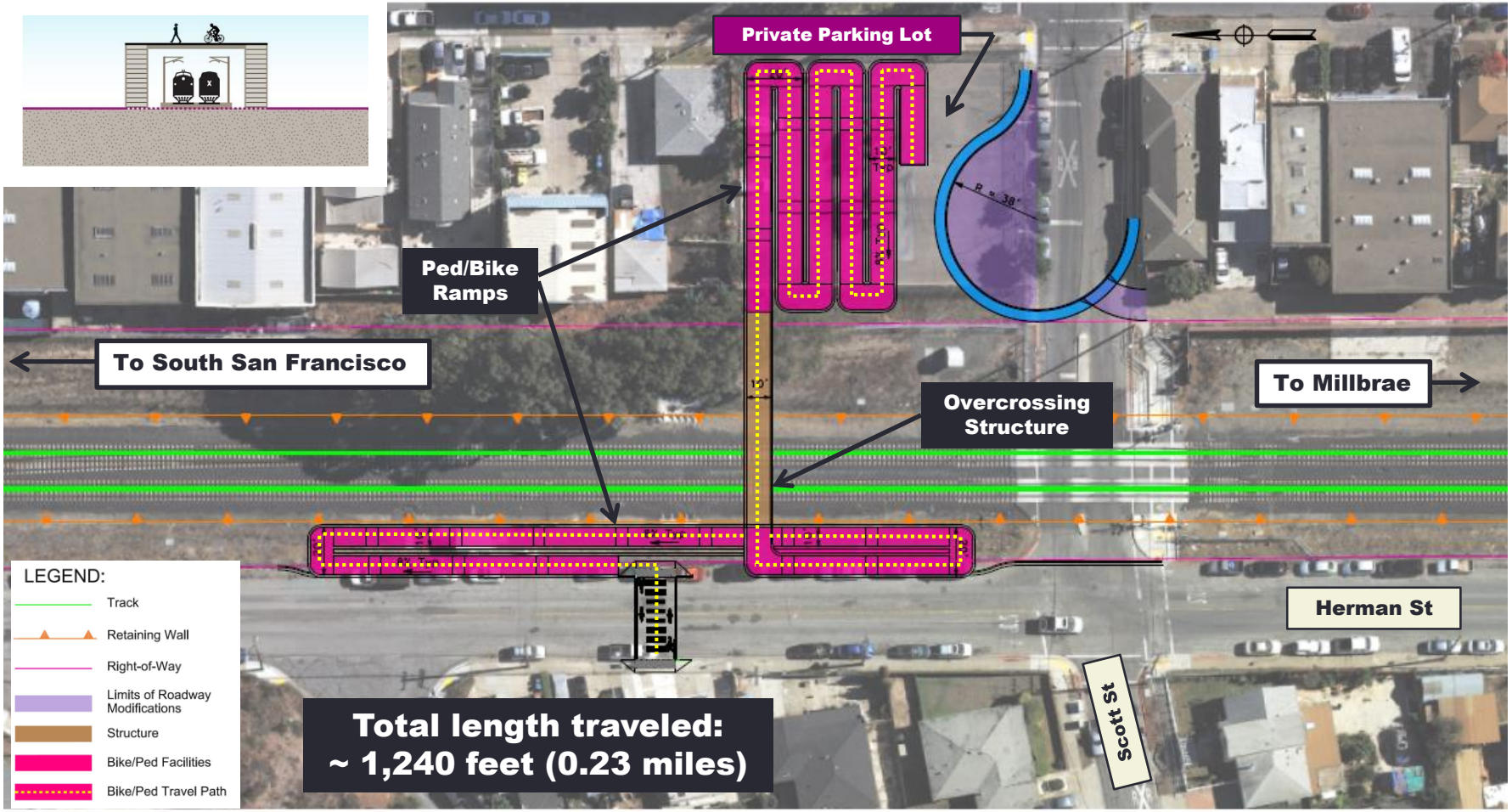
Homer Avenue, Palo Alto

ALTERNATIVE 1: TRACK RAISED
Scott St Typical Section – Overcrossing

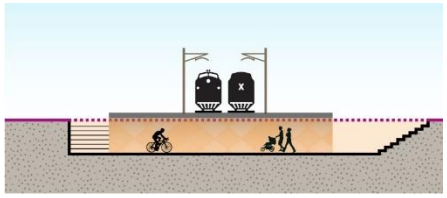
Top of Rail Elevation Increase	2.5 ft
Vertical Clearance	27 ft
Structure Depth	4 ft
Total Elevation Climb from Herman St	**33.5 ft**



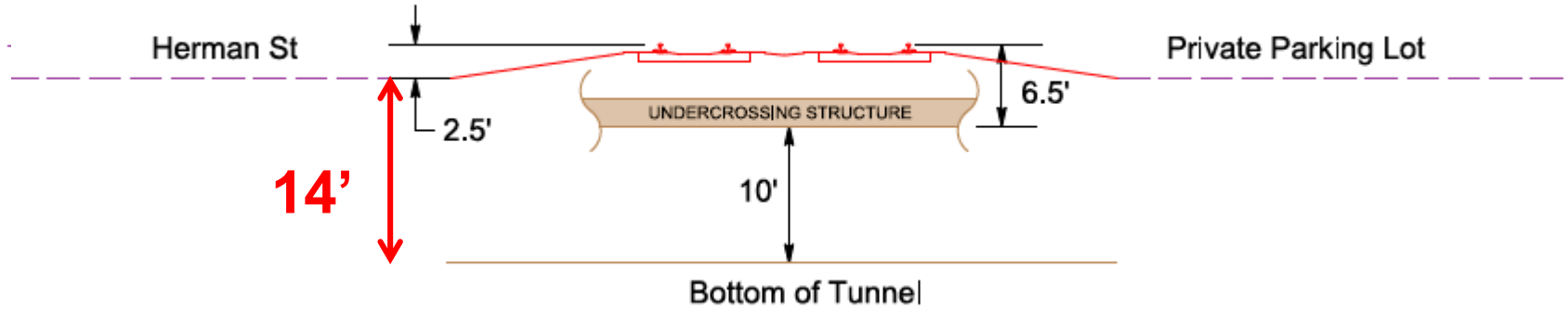
ALTERNATIVE 1: TRACK RAISED
Scott St Layout – Overcrossing



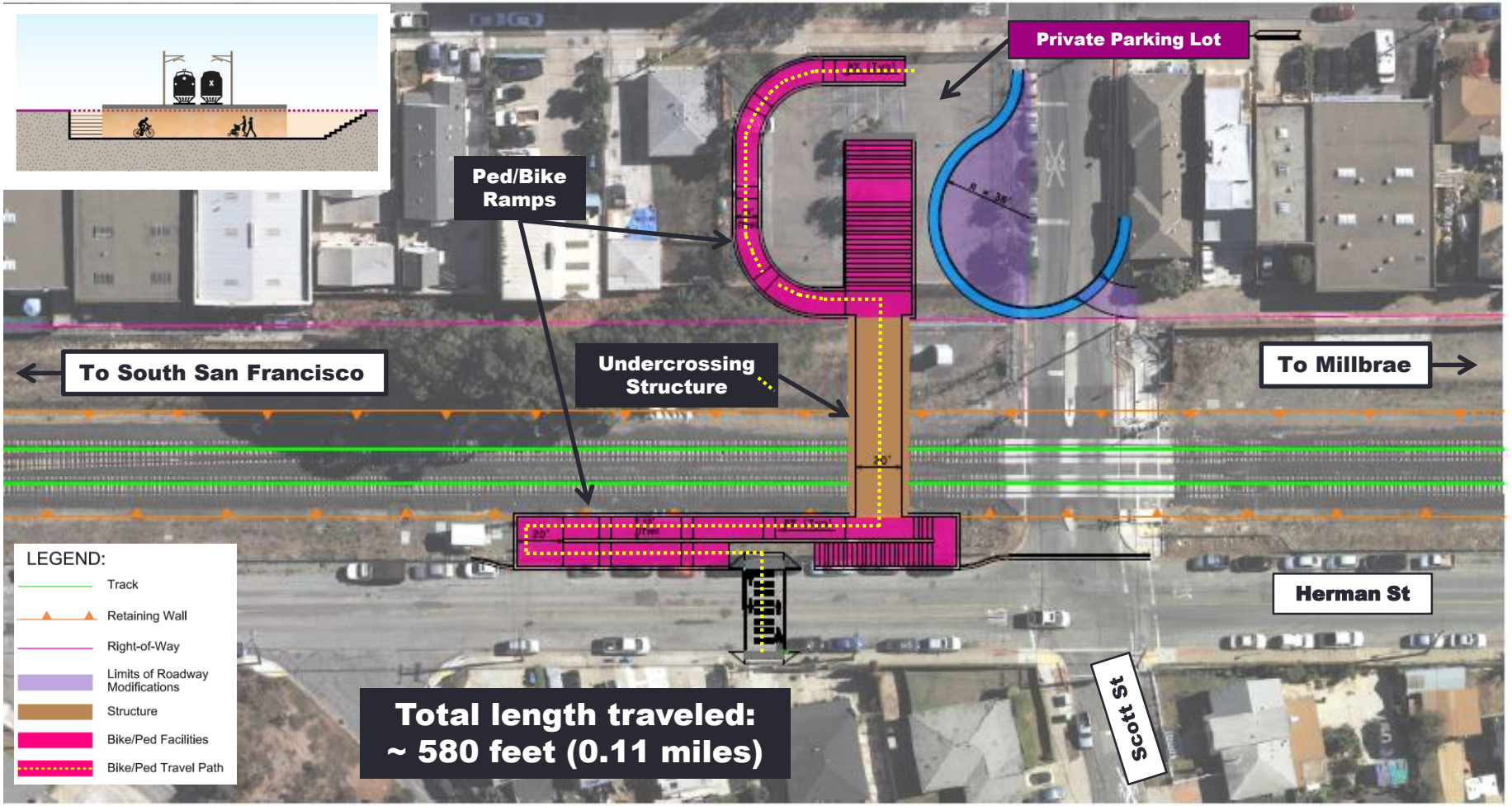
ALTERNATIVE 5: TRACK RAISED
Scott St Typical Section - Undercrossing



Top of Rail Elevation Increase	2.5 ft
Vertical Clearance	10 ft
Clearance from roof of structure to T/R	6.5 ft
Total Elevation Descent from Herman St	**14 ft**

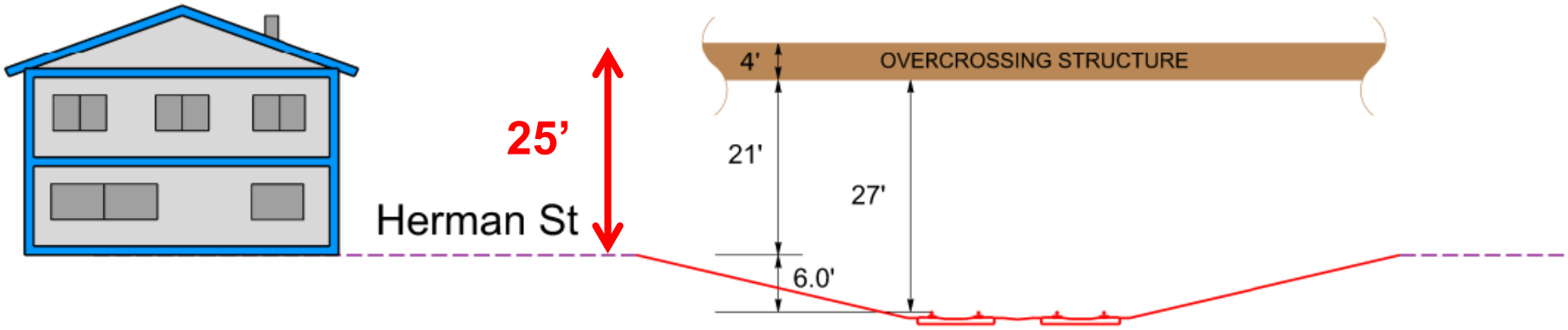


ALTERNATIVE 5: TRACK RAISED
Scott St Layout – Undercrossing

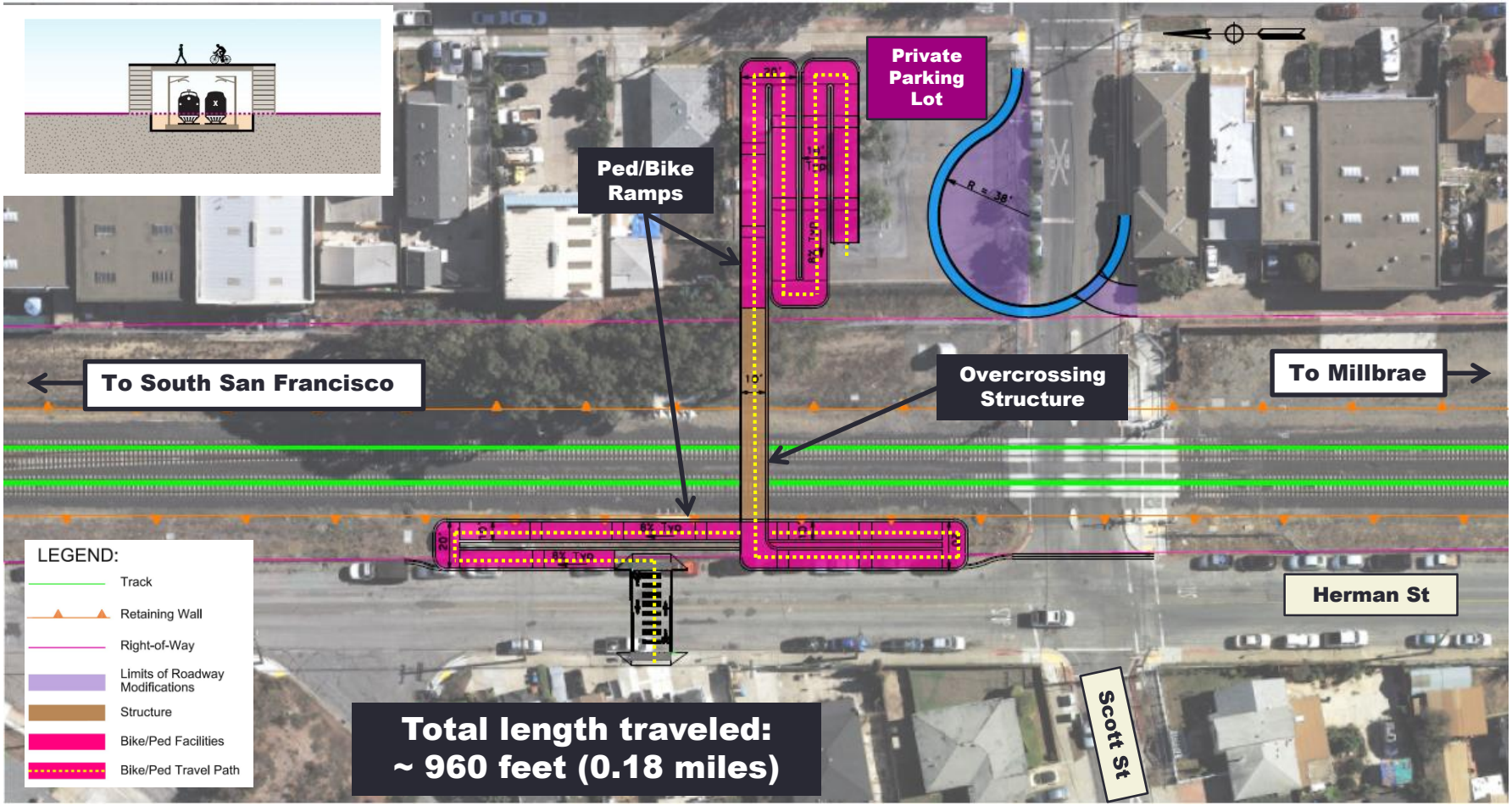


ALTERNATIVE 2: TRACK LOWERED
Scott St Typical Section – Overcrossing

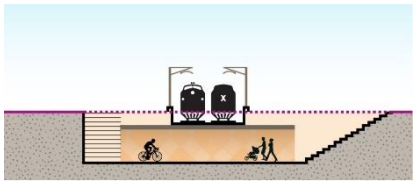
Top of Rail Elevation Lowered	-6 ft
Vertical Clearance	27 ft
Structure Depth	4 ft
Total Elevation Climb from Herman St	**25 ft**



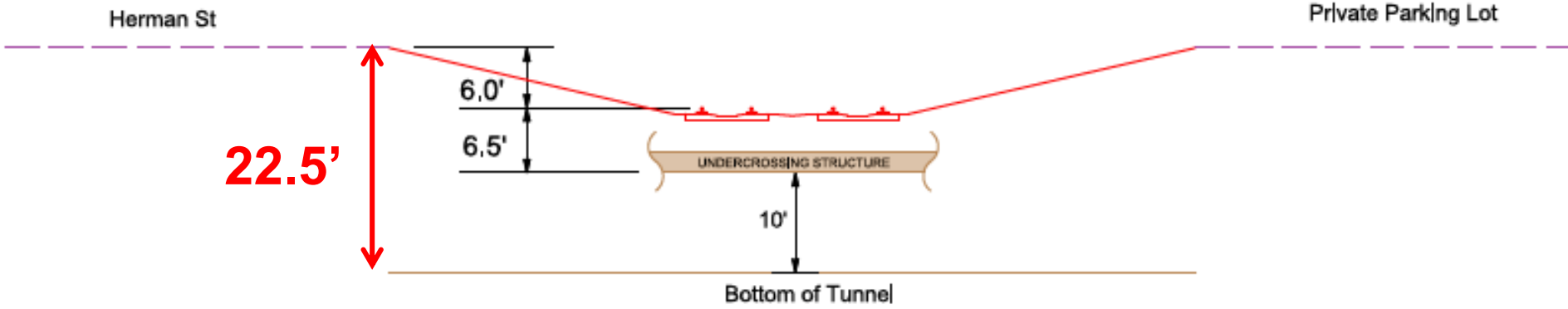
ALTERNATIVE 2: TRACK LOWERED
Scott St Layout – Overcrossing



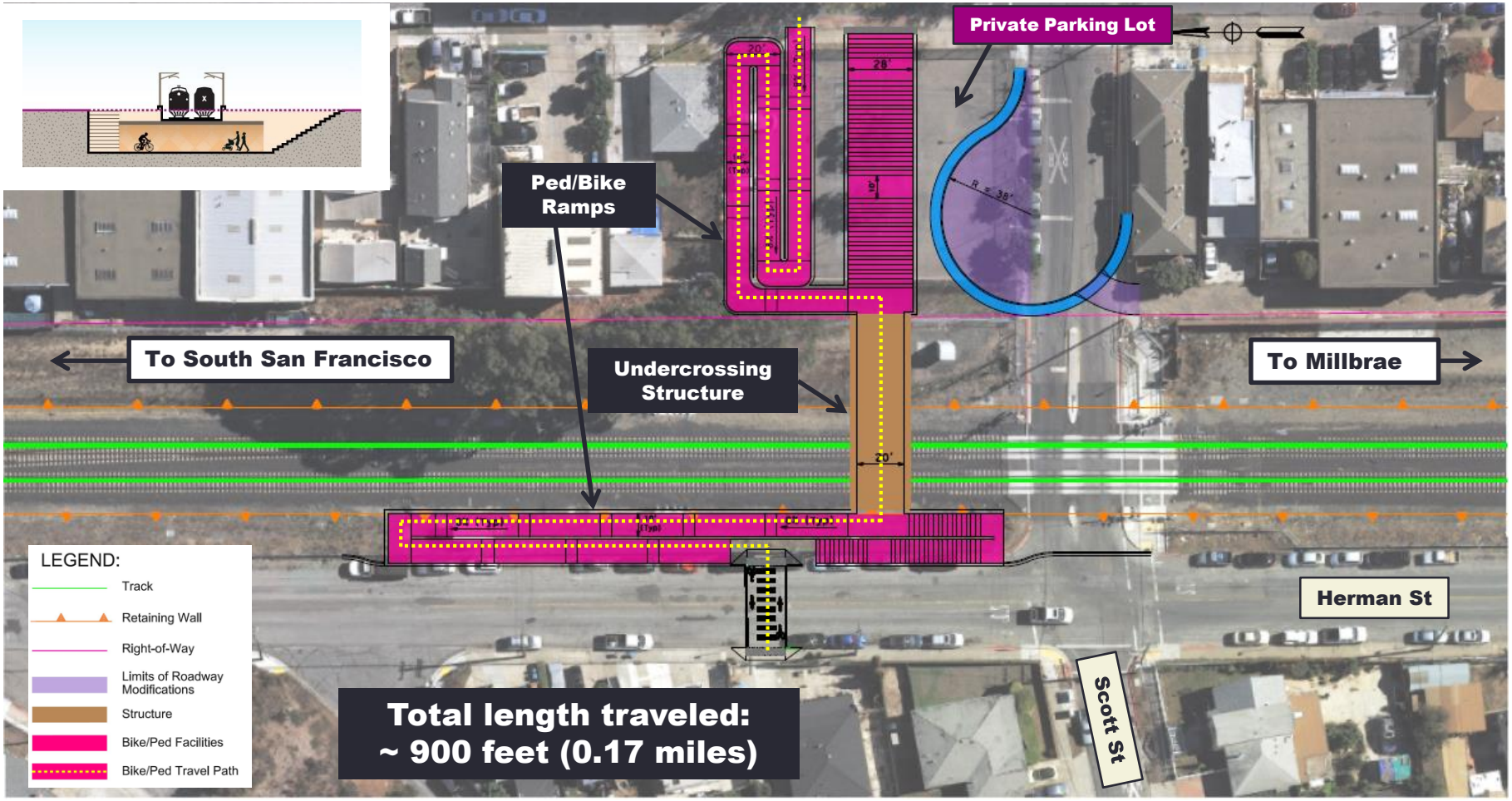
ALTERNATIVE 6 – TRACK LOWERED
Scott St Typical Section – Undercrossing



Top of Rail Elevation Lowered	6 ft
Vertical Clearance	10 ft
Clearance from roof of structure to T/R	6.5 ft
Total Elevation Descent from Herman St	**22.5 ft**



ALTERNATIVE 6 – TRACK LOWERED
Scott St Layout – Undercrossing



FEEDBACK FROM COMMUNITY MEETING #3

- Disliked a pedestrian/bicycle undercrossing due to concerns
  - Homeless encampments
  - Reduced visibility of ped/bicyclists using an undercrossing
  - Stormwater flooding issues
- Desired to keep the at-grade crossing with no grade separation
- Asked whether a pedestrian/bicycle crossing was needed at all
- Terminus of the crossing should be moved north to align with an intersection or moved completely to Tanforan Avenue
- Requested confirmation that residential properties would not be taken or surrounding properties lowered or raised as a result of the railroad construction
- Desired soundwalls with a pedestrian/bicycle overcrossing

DECISIONS TO BE MADE

- Railroad Track
  - 3 Alternatives for Scott Street
    - Raised, lowered, or keep at current grade
- Pedestrian/Bicycle Crossing
  - Overcrossing vs Undercrossing

THREE POSSIBILE TRACK ELEVATIONS

- Tracks raised 2.5 ft – Alternatives 1 & 5
- Tracks lowered 6 ft – Alternatives 2 & 6
- Tracks stay at grade – Alternatives 3,4,7, & 8
  - Similar elevation as Alternatives 1 and 5
- Context of South San Francisco
  - Property Impacts – every alternative has property impacts in SSF with Alternatives 1 & 5 having the least, increasing with alternatives to most with Alternatives 4 & 8
- Project Costs
  - Alternatives 1 & 5 have least expected total costs
  - Alternatives 2, 3, 6, & 7 have higher expected total costs
  - Alternative 4 & 8 have the highest expected total costs

CONCEPTUAL RENDERINGS

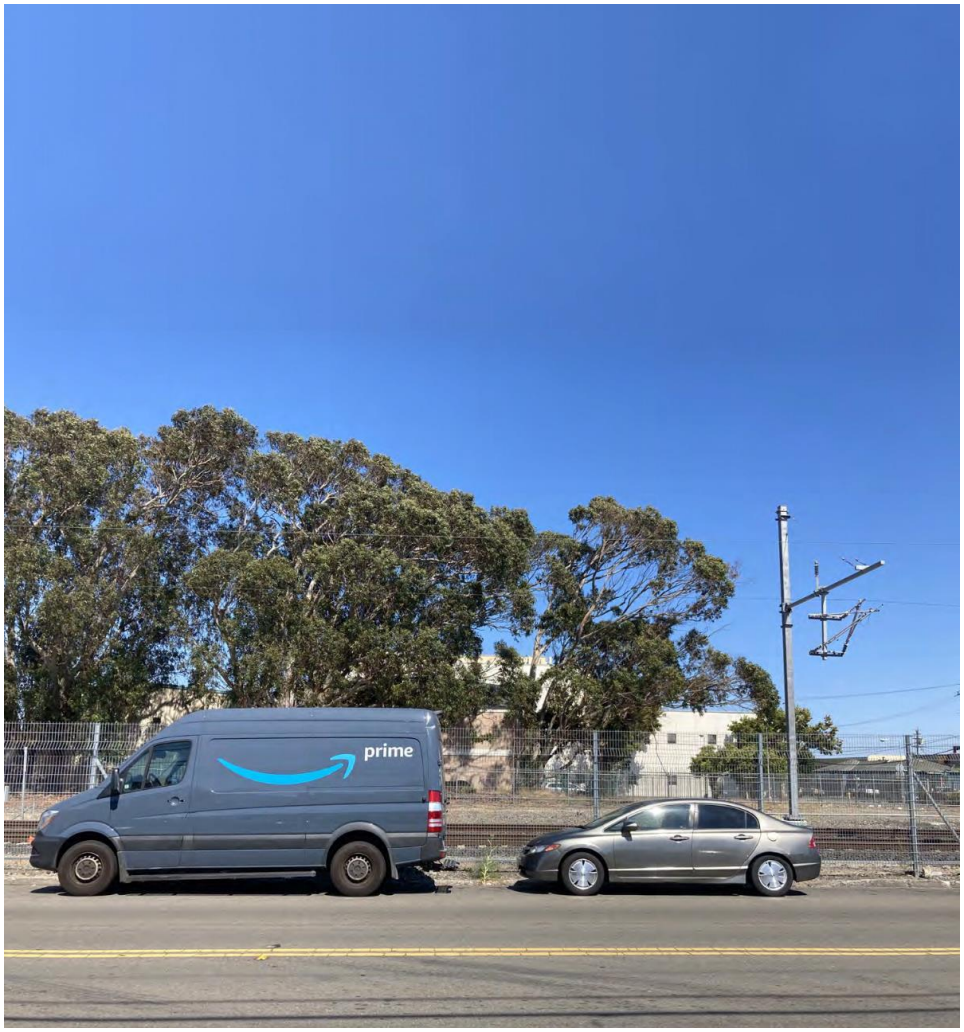
- On Herman Street looking north at Scott Street
- On Herman Street looking east toward tracks at crossing
- On Herman Street near Bayshore Circle looking south

CURRENT CONDITION

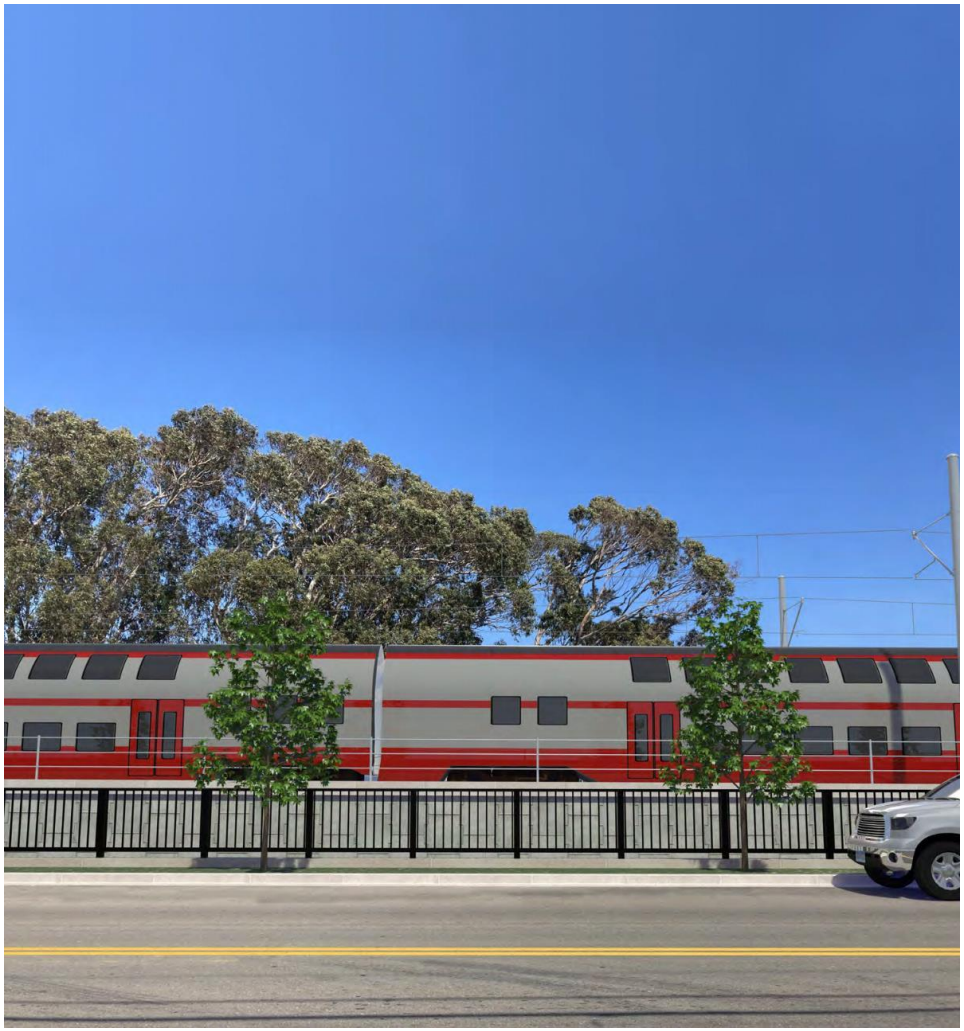
PED/BIKE UNDERCROSSING

PED/BIKE OVERCROSSING

CURRENT CONDITION



PED/BIKE UNDERCROSSING



PED/BIKE OVERCROSSING

CURRENT CONDITIONS

PED/BIKE UNDERCROSSING

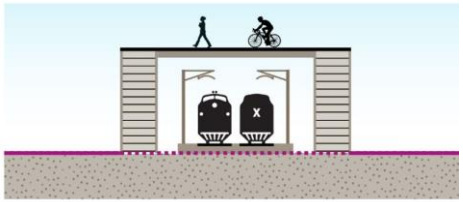
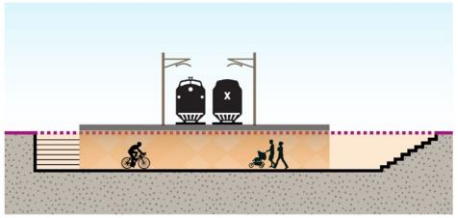
PED/BIKE OVERCROSSING

DESIGN CONSIDERATIONS

- Vertical clearance requirement
  - Over a freeway = 18.5 feet
  - Over the tracks = 27 feet

- 2.5 foot rise every 30 feet (8.33%) with 5-foot landings

ADVANTAGES AND DISADVANTAGES OF PED/BIKE CROSSING OPTIONS

Ped/Bike Crossing	Advantages	Disadvantages
 OVERCROSSING	▪ Easier to construct than an undercrossing ▪ Less disruption to railroad operations during construction ▪ Potentially less costly	▪ More difficult to cross (longer ramps) ▪ Greater visual impact overall
 UNDERCROSSING	▪ Easier for pedestrians to cross (shorter ramps) ▪ Low visual impact	▪ More difficult to construct than an overcrossing ▪ Greater impact to railroad operations during construction ▪ Potentially more costly

NEXT STEPS

- Council to provide direction at the regular meeting on 8/25/2020 on preferred alternative for tracks and crossing treatment at Scott Street
- Prepare conceptual designs, cost estimate, and renderings of preferred alternative
- Complete Project Study Report
- Seek funding for next phases
  - Currently, numerous City-led grade separation projects underway and at various stages of development.
  - Cities currently compete with each other for limited funding and priority.

QUESTIONS?

Scott Street in San Bruno

THANK YOU!

Scott Street in San Bruno